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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/494,183	01/31/2000	Yukihiro Ozeki	32178-157380	3124

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EXAMINER
PHILPOTT, JUSTIN M

ART UNIT	PAPER NUMBER
2665	5

DATE MAILED: 04/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/494,183	OZEKI, YUKIHIRO	
	Examiner	Art Unit	
	Justin M Philpott	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 January 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over prior art FIG. 5 of the instant application in view of U.S. Patent No. 3,718,767 to Ellis.

Regarding claim 1, prior art FIG. 5 of the instant application teaches a multiplexer (300) which divides a carrier pulse train having predetermined amplitude into N pulse trains (e.g., N is equal to two), modulates (302, 303) the N pulse trains by N data signals, respectively, to produce modulated N pulse trains, and time-division multiplexes the modulated N pulse trains (see pages 1-3). Applicant also admits that the multiplexer teachings, while shown in FIG. 5 as relating to optical communications, also apply to other multiplex communication systems such as radio multiplex communication systems (page 3, lines 15-17). However, prior art FIG. 5 of the instant application does not teach an amplitude adjuster which implements an amplitude adjustment so that the modulated signals (in this case, modulated N pulse trains) have different amplitudes from each other. That is, as disclosed by Applicant, the system of prior art FIG. 5 is unable to determine which of, e.g., first and second signals is extracted in the demultiplexer (receiving

end) and accordingly selection between the first and second signals is not possible (page 3, lines 10-14).

Ellis teaches a multiplexing system (FIGS. 1-5) wherein an amplitude adjuster (multi-level coder 9 in combination with modulator 8) implements an amplitude adjustment so that modulated signals (e.g., signaling data inputs 1-N) have different amplitudes from each other (e.g., see "levels" in Table, col. 6). The teachings of Ellis provide a receiving end with the ability to determine which of the signaling data inputs is extracted in the receiving end and accordingly, the ability to select between the first through N signals is provided by means of this amplitude adjustment. Furthermore, the communications system of Ellis provides an improved method for separating a composite signal into a plurality of original separate signals (e.g., see col. 7, lines 1-7) such that the receiving end consists of an all-solid-state arrangement (see col. 3, lines 1-12) which avoids the undesirable cost and delay characteristics of conventional prior art filtering techniques. Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the teachings of Ellis to the communications system of Applicant's prior art FIG. 5 in order to provide a receiving end of a communications system with the ability to determine which of the signaling data inputs is extracted at the receiving end and the ability to select between the first through N signals at the receiving end, and furthermore to provide an improved method for separating a composite signal into a plurality of original separate signals whereby the receiving end consists of an all-solid-state arrangement which avoids the undesirable cost and delay characteristics of conventional prior art filtering techniques.

Regarding claim 2, in the multiplexer according to prior art FIG. 5 of the instant application the carrier pulse train has a period T between pulses thereof, and the modulated N pulse trains are time-division multiplexed with a phase difference of T/N (pages 1-3).

Regarding claim 3, the multiplexer according to prior art FIG. 5 of the instant application is indicated as an optical multiplexer (300) which suggests that the pulse train is accordingly an optical pulse train.

Regarding claim 4, in the modulators 302 and 303 of prior art FIG. 5 of the instant application the N pulse trains are modulated by the N data signals through amplitude shift key modulation (page 1, lines 20-25).

Regarding claim 5, Ellis teaches a form of pulse code modulation (see Table, col. 6).

Regarding claims 6 and 12, prior art FIG. 5 of the instant application comprises a demultiplexer (400) which extracts the received modulated N pulse trains discussed above regarding claim 1. Also as discussed above, Ellis teaches an amplitude adjuster. Corresponding to the amplitude adjuster, Ellis further teaches an amplitude detector (20 in FIG. 1) for deriving an amplitude of one of the signaling data inputs which is extracted, and a judging circuit (decoder 21) for identifying the extracted signaling data input based on the amplitude derived by the amplitude detector (e.g., see col. 5, lines 6-15).

Regarding claim 7, Ellis further teaches the judging circuit comprises a mean amplitude detector (e.g., +- ½, and ⅓ MAX. VOLTAGES, see FIG. 5) for deriving a mean amplitude of the multiplexed composite signal (33), and a comparator (e.g., voltage dividers 35, 39, 48, 62) for comparing the amplitude of the extracted signal derived by the amplitude detector (20) and the mean amplitude of the multiplexed composite signal derived by the mean amplitude detector (+-

½, and ⅓ MAX. VOLTAGES), so as to identify the extracted signal (signaling data outputs at 47 and 67).

Regarding claim 8, the demultiplexer (400) of prior art FIG. 5 of the instant application further comprises a timing generator (401) for generating a timing every T based on T/N of the multiplexed modulated pulse train. Furthermore, Ellis teaches a timing generator (local oscillator 6, see FIG. 1) which provides control such that the signal identified by the judging circuit (21) agrees with one of the signals of the composite signal. While Ellis does not specifically teach one of the signals of the composite signal is designated by an externally inputted select signal, Ellis suggests implementing a select signal via controlling the switches (11, 17) wherein the switches (in the positions as shown in FIG. 1) in conjunction with the operation of the timing generator (local oscillator 6) designate selecting one of the composite signals (e.g., see col. 4, line 21 – col. 5, line 25). Furthermore, Ellis teaches passing/blocking in accordance with voltages of a predetermined range (levels, e.g., via voltage dividers 35, 39, 48, 62 in FIG. 5) wherein a drive circuit (not shown) inherently supplies the designated voltage sources (e.g., +- ½, and ⅓ max. voltage).

Regarding claim 9, Ellis teaches the passing/blocking (FIG. 5) passes a current (flowing from filter 18 to outputs 47 and 67) corresponding to an amplitude, and the amplitude detector (20) derives an amplitude based on the current.

Regarding claim 10, in both the embodiment of the prior art FIG. 5 of the instant application and in Ellis, N is 2. Ellis further teaches the voltage of the predetermined range of the passing/blocking is discrete relative to a voltage applied thereto (see Ellis FIG. 5 regarding discrete voltages equal to +- ½, and ⅓ max. voltage). Furthermore, the embodiment of the prior

art FIG. 5 of the instant application teaches the timing generator (401) produces a sine wave signal having the period T (page 2, lines 9-13), and a drive circuit adjusting to the sine wave signal produced by the timing generator so that crest or trough portions of the sine wave signal reach the voltage of a predetermined range (page 2, lines 11-13), and Ellis further teaches regarding the predetermined range that passing/blocking causes one of the two input signals to pass through the circuit (FIG. 5). Still further, the embodiment of the prior art FIG. 5 of the instant application further teaches the timing controller adds a given DC bias voltage to the sine wave signal produced by the timing generator so that trough or crest portions of the sine wave signal reach the voltage of the predetermined range (via EA drive amp 404, see page 2, lines 18-20).

Regarding claim 11, the multiplexer according to prior art FIG. 5 of the instant application is indicated as an optical multiplexer (300) which suggests that the pulse train is accordingly an optical pulse train.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5,805,321 to Ooi et al discloses a control unit for optical modulators producing a multiplexed optical output signal wherein optical modulators change the amplitude of signals,

U.S. Patent No. 6,067,180 to Roberts discloses pulse shaping and regeneration of optical signals wherein amplification and attenuation is utilized in conjunction with delays, and

U.S. Patent No. 6,229,633 to Roberts et al. discloses optical sampling by modulating a pulse train including the use of amplification.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin M Philpott whose telephone number is 703.305.7357. The examiner can normally be reached on M-F, 9:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy D Vu can be reached on 703.308.6602. The fax phone numbers for the organization where this application or proceeding is assigned are 703.872.9314 for regular communications and 703.872.9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.305.4750.

Justin M Philpott

JMP

April 1, 2003

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600